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Notified in A.C.Is. 17th July, 1940

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Machine Gun Handbook

(Technical)

Volume I, Pamphlet No. 2

Mountings, Tripod, .303-in. M.G., Mk. IV,
Adapter, Vickers, M.G., Mk. I,
Mount, Field, Vickers .303-in. M.G., Mk. I,
Shoulder-piece, M.G., No. 4,
Packsaddlery, etc.

for Vickers .303-in. and 5-in. Machine Guns

1940

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By Command of the Army Council,

I. J. G. 1940

THE WAR OFFICE,
17th July, 1940.

PLATES

MOUNTING, TRIPOD, .303-IN. M.G., Mk. IV "B"

PLATE

- I Section of elevating gear.
- II Right elevation with gun mounted (normal position).
- III Right elevation with gun mounted.
- IV MOUNT, FIELD, VICKERS .303-IN. M.G., Mk. I and SHOULDER-PIECE, M.G., No. 4, showing method of mounting gun.

CHAPTER I

MOUNTING, TRIPOD, .303-IN. M.G., MARK IV "B"

1.—General notes on care and adjustment.

The following notes are drawn up as a guide to officers and others for the detection of faults in the Mark IV "B" mounting.

Short instructions are given as to how these various faults can be put right, and the proper person qualified to carry out such repairs and adjustments, as may be required.

Inaccuracy in shooting can, in nearly every case, be attributed to the mounting and not to the gun.

Although play or wear in any one particular part of the mounting may be so slight as to be almost negligible, yet there are so many places where play can originate, that the effect of it becomes cumulative, and can cause serious unsteadiness in the gun. All errors due to play in joint pins and elevating gear are gradual, and should be attended to when opportunity occurs.

The mountings must be overhauled by an armourer every quarter, or more often as necessary, properly cleaned, re-oiled or greased. All taper pins and fixing pins must be tight, all adjusting screws and nuts properly adjusted, and the mounting left in a properly lubricated and serviceable condition.

Defects or damage should be reported directly they are discovered, so that they may be remedied without delay.

One of the chief causes of unsteadiness in the gun can be found in the elevating gear, and before going into the details of where wear can take place, and the remedy to be applied, it is first necessary to understand the construction of the mounting.

2.—General description

(Plates II and III)

The mounting consists principally of a crosshead, elevating gear and socket mounted on three legs.

It is constructed to give 13 degrees elevation and 25 degrees depression at heights varying from 14½-in.* to 30-in. from the axis of the gun to the ground. By arranging the position

* See Plate III.

of the rear and front legs respectively, elevation may be given up to about 43 degrees and depression to 55 degrees. An all-round traverse can be obtained.

The crosshead, to which the gun is pivoted, is formed with a pivot to fit into the socket and an arm which carries the elevating gear.

In cases where it is found that, owing to the position of the web of the crosshead, the gun cannot be brought down so that the stop on the gun will rest on the web without bringing the fusee spring box of the gun in contact with the curved arm of a crosshead, a stop piece will be riveted to the front of the internal crossweb, by an armourer, in accordance with the drawing in para. 17,289 L. of C.

The elevating gear, which is actuated by an elevating wheel, consists of an inner and outer screw (right and left-handed) and a nut, working within a tumbler. A chain secures the inner screw to the crosshead to prevent loss.

The socket is bored to receive the crosshead and is provided with three lugs to which the legs are hinged; a jamming block and screw with handle is attached to the front to secure the crosshead in any desired angle of traverse; the block works in a cannellure in the upper portion of the crosshead pivot and prevents it rising. Both faces of the rear lug and one face of each front lug are fitted with clutch plates having radial serrations to correspond with similar serrations on the faces of the leg joints. Joint studs with disc spring and jamming handle are fixed to the front lugs, by which the legs are securely clamped to the socket in the required position.

The direction dial, Mk. II is fixed to the top of the socket of the mounting by three set screws and provided with a rotatable disc graduated from 0° to 180° on each side of the socket, one side being marked R and the other L; 0 is marked by a screw.

This disc can be fixed in any desired position by means of a clamping screw.

A pointer is fitted on the right side of the crosshead for use with the dial.

The legs are of tubular steel, the lower ends being fitted with shoes, to steady the mounting on the ground, and the upper ends having a joint with radial serrations mentioned above. The rear leg is provided with a joint pin with nut and jamming handle.

On a portion of the periphery of the leg joints numbers are stamped at regular intervals, so that, when read in conjunction with a zero mark, the relative position of the legs to their normal position may be readily seen.

Weight of mounting—about 56 lb.

DETAILED DESCRIPTION OF THE ELEVATING GEAR

(Plate I)

Tumbler.—The tumbler is a manganese bronze casting. Beginning from the top it is threaded internally to a depth of about a quarter of an inch to take the tumbler nut.

It is then bored cylindrically for about two inches until a shoulder is reached, which reduces the diameter about one-eighth of an inch, and is continued down to the bottom of the tumbler.

The upper cylindrical portion is provided with two feathers which commence just below the screwed part, and these are continued downward, stopping short about three-quarters of an inch from the shoulder.

These feathers are for the purpose of positioning the elevating nut and preventing its rotation.

The lower cylindrical portion is plain and of the same diameter as the bush which passes through it.

Externally the tumbler is provided with two trunnions which are bored out to take the tumbler pins.

To the rear of the tumbler is a projection bored through to take the jamming bolt with nut and pointer. The rear of the tumbler is slit up from the bottom through the projection for two inches in order to allow the jamming bolt to operate.

Bush, elevating wheel.—The bush is of manganese bronze. Externally the upper portion is provided with a collar of the same diameter as the upper internal cylindrical portion of the tumbler, the part below the collar being of the same diameter as the lower internal cylindrical portion of the tumbler.

The collar is provided with two feather-ways which allow the bush to pass through the upper portion of the tumbler when stripping or assembling, the collar being seated against the shoulder in the tumbler.

The bush is free to rotate when the collar has passed below the feathers on the upper cylindrical portion of the tumbler, and the lower portion of the bush projects about one inch below the bottom.

Towards the bottom of the bush a slot is provided to take the elevating wheel feather, and the bottom end threaded to take the elevating wheel nut.

Internally the bush is bored out to the diameter of the outer screw to form a guide for the latter. It is also provided with two feathers running the whole length which engage the feather-ways on the outer screw.

Feather, elevating wheel.—This is a small piece of steel, machined to fit the slot cut in the lower end of the bush.

Before removing the feather it should be suitably marked to ensure that it is replaced in the same position.

Elevating wheel.—The elevating wheel is made of manganese bronze. Its hub is bored out to the same diameter as the bush over which it fits. It has a slot cut on the inside to fit the feather, thereby positioning it to the bush.

One complete turn of the elevating wheel will elevate or depress the gun by 4 degrees.

The upper surface of the rim of the wheel is divided by wide notches into four main divisions, each giving one degree of elevation. Each division is sub-divided by narrow notches representing ten minutes and each such division is further sub-divided by a dot into two equal parts of five minutes.

On the left side of the jamming bolt a pointer is provided for use in connection with these graduations.

Nut, securing, elevating wheel.—Consists of a manganese bronze ring threaded internally, to screw on to the lower end of the bush, thus retaining the elevating wheel. The bottom surface of this ring is provided with two holes to allow of its adjustment by means of a punch or other suitable tool.

Nut, tumbler.—This nut consists of a manganese bronze ring. Externally it is threaded to screw into the top of the tumbler; internally it is bored out and allows the outer screw to pass freely through.

The top side of the tumbler nut is provided with two holes to allow of adjustment by means of a punch or other suitable tool.

When in position the nut is screwed down tightly against the shoulder in the tumbler, thus securing the elevating nut in position.

Nut, elevating.—This is a steel cylindrical nut of the same diameter as the upper internal cylindrical portion of the tumbler, and is provided with two feather-ways running the whole length of the nut. These feather-ways engage with the feathers on the inside of the tumbler.

Internally the nut is provided with a double left-hand thread to take the outer screw.

When in position the lower end of the nut bears against the collar of the bush and is retained in this position by means of the tumbler nut.

Screw, elevating, outer.—This screw is made of steel and has a hole running throughout its length.

Externally it is provided with a double left-hand thread to fit the elevating nut.

The lower end of this screw has a collar which acts as a stop to prevent its being screwed out of engagement.

Throughout the whole length are two feather-ways which

engage with the feathers on the inside of the bush when the screw is assembled.

Internally it is provided with a double right-hand thread, which extends from the top to midway, and through which the inner screw works. The lower half is drilled out to the full diameter of the inner screw and is unthreaded.

Screw, elevating, inner.—The inner screw is also made of steel with a solid shank.

The upper portion is formed into a "T" head for the rear gun joint and is drilled to take the elevating joint pin.

The shank is threaded with a double right-hand thread which screws into the top of the outer screw.

Just below the "T" joint will be found a small hole drilled through the shank to take a split pin to which is attached the chain, securing joint pin, and chain, securing elevating gear. This attachment prevents loss if the inner screw becomes unscrewed.

Bolt, jamming, with nut and pointer.—This is a half-inch steel bolt which passes through the holes provided in the rear projection of the tumbler, the elevating pointer being gripped between the head of the bolt and the left side of the projection.

On the nut being tightened up it contracts the lower portion of the tumbler, and by this means the requisite amount of grip can be imparted to the elevating wheel.

Pins, tumbler.—Are made of steel, turned to two diameters, and provided with flat heads. They are positioned in holes drilled through the extremities of the crosshead and are secured in position by split pins.

The ends of their shanks project inward and are seated in the holes in the tumbler trunnions.

3.—Action of elevating gear

On rotating the elevating wheel the movement is transmitted to the bush to which it is keyed by means of the feather.

The bush in its turn rotates the outer screw to which it is keyed by means of the feathers on the inside of the bush being engaged in the feather-ways of the outer screw.

The outer screw, on being rotated, working in the elevating nut, rises or falls according to the direction in which the elevating wheel is rotated.

The inner screw, which works inside the outer screw, is itself prevented from rotating by being attached to the gun, and is therefore forced upward or downward according to the direction in which the elevating wheel is rotated, for the reason that the threads work in *opposite directions*.

If both threads of the inner and outer screws acted in the same direction it will be seen that as fast as the outer screw was screwed up, it would climb up the inner screw, and there would be no movement transmitted to the gun.

4.—Stripping and assembling the elevating gear

Stripping the elevating gear should not be undertaken except for the purpose of repair, and then only by an armourer.

It is not advisable to remove the tumbler from the crosshead, unless absolutely necessary, owing to difficulties connected with the fixing of the tumbler pins.

The sequence of operations for stripping is as follows :—

1. Disconnect split pin, securing chains and joint pin from head of inner screw.
(Frequent removal of this pin soon results in its fracture.)

2. Unscrew inner screw.
3. Unscrew nut, securing, elevating wheel.
4. Slide off elevating wheel.

This may sometimes present difficulty, owing to the elevating wheel being tight on the bush, and it may be necessary to resort to the use of the raw-hide mallet to drive it off.

5. Remove the feather from elevating wheel bush, having suitably marked its position with a centre punch.
6. Unscrew the jamming bolt with nut and pointer.
7. Unscrew the tumbler nut.
8. Take hold of the outer screw at the top and withdraw it from the tumbler, at the same time bring out the elevating nut attached to it.

This operation can be assisted by applying pressure from below on the bush.

Should there be any washers present on the top of the elevating nut, care must be taken to see that they do not become jammed during this removal.

9. The bush is now removed by pushing up from below, taking care that the feather-way on the collar of the bush is in alignment with the feathers on the inside of the tumbler.

For assembling (reverse the above procedure) :—

1. In replacing the bush see that the feather-ways on the collar are in alignment with the feathers on the inside of the tumbler.

2. When replacing the elevating nut see that the washers, if any, are replaced on the top where the tumbler nut bears down on it.
3. When replacing the feather, elevating wheel, see that it is assembled correctly.
4. When replacing the inner screw, make sure that it projects from the top of the outer screw the same distance that the outer screw projects from the top of the tumbler nut.

5.—Examination, adjustment and repair

1. For the purpose of examination the following sequence is adopted :—

1. Legs.
2. Socket.
3. Crosshead and pivot.
4. Elevating gear.

2. *Legs.*—

Armourer. The legs are very strong but occasionally become slightly bent. These can be straightened in the forge.

If badly bent or dented the mountings must be returned for factory repair.

3. *Clutch plates.*—

Machine gunner. The greatest care must be taken to ensure that the teeth of the clutch plates are kept clean and free from grit.

Armourer. Burrs on the teeth can be removed by a file; at the same time make sure that the three screws securing the clutch plates are tight and that the keys on the plates are a good fit in the socket keyways.

It may happen that the "studs, front legs" become bent, thus preventing the clutch plates from seating correctly in the leg joints. It will then be found impossible to tighten up the clamping handles which should be approximately 20° to 25° beyond the vertical.

Armourer. To remedy this fault the studs must be removed and new ones fitted.

4. *The socket.*—

The socket itself is substantial and not liable to come to any harm; the bearing surfaces are shielded from external blows.

Armourer. Occasionally the clamp screw for checking traverse may be out of action owing to the handle being broken off or the jamming block becoming worn.

In both cases the nut must be removed, and care must be taken in doing so to remove the fixing pin first.

In replacing a jamming block ensure that the end of the steel screw does not protrude so as to cut into the pivot itself.

The upper and lower bearings in the socket must be kept clean and free from grit.

5. *Crosshead.*—i. *Pivot.*

Armourer. Examine the upper and lower bearings for wear. These bearings should be absolutely smooth and true, and must not be filed, except to remove small burrs, and then only with a dead-smooth file.

Armourer. Ascertain that the pivot is right home in its bearing and that its movement is not in any way interfered with by incorrect fitting of the direction dial.

Should the pivot not seat correctly, the jamming block will cut into the pivot bearing instead of running in the cannellure provided, and the crosshead will be unsteady.

ii. *Joint.*

It is often found that the jaws have become widened, and consequently, when the gun is mounted, there is considerable lateral play.

This widening is brought about by various causes, continual tapping on the rear portion of the gun being mainly responsible.

Armourer. This defect can be easily corrected: The metal of which the casting is made is soft, and by careful use of a raw-hide mallet, blows being given alternately on either side, the jaws can be closed until, with a slight pressure, the gun can be slipped into position and the crosshead pin assembled.

A metal hammer must on no account be used.

6. *Bearings.*—

Due to the continual insertion and withdrawal of the crosshead joint pin, these bearings become very much worn in time and are then a prevalent source of unsteadiness. This unsteadiness is accentuated should the jaws be too wide.

R.A.O.C. There is no satisfactory method of treating this workshop defect other than re-bushing.

or Keeping the jaws well up will, in a great degree, overcome this unsteadiness.
factory repair.

7. *Joint pins.*

These pins must be straight and smooth, and should make a good sliding fit through crosshead and gun.

Machine They must not be filed down in any way to gunner. make a loose fit. Except for the removal of any small burrs, which can be taken off with a smooth file, they must not be interfered with.

Armourer. The pins are provided with a feather which serves a useful purpose, and must not be removed. Should they be broken off they can be replaced.

Should the pins become very badly worn they should be replaced by new ones.

8. *Elevating gear.*—i. *Joint pins.*

The same remarks apply to these pins as to the crosshead joint pins. If they become very badly worn they should be replaced.

ii. *Tumbler.*

It may be found that the tumbler becomes loose on its trunnions, due to the wear of the tumbler pins in their bearings; this gives rise to lateral play.

Armourer. This can be overcome temporarily by removing the tumbler and swaging in the bearings with a "ring punch".

iii. *Elevating nut.*

Slight vertical play in the elevating nut may arise from wear between the collar of the bush and the shoulder of the tumbler.

Machine This may be taken up by loosening the jamming gunner. bolt, screwing in the tumbler nut and re-tightening the jamming bolt.

Armourer. Should this wear be so great that, even though the tumbler nut is screwed in to its limit, there is still vertical play, it will then be necessary to insert a thin metal washer or washers on top of the elevating nut. Tin-plate washers are provided for the purpose.

As a temporary expedient a cardboard washer can be used.

iv. *Elevating wheel.*

Armourer. When appreciable end wear is shown between the hub of the elevating wheel and the bottom of the tumbler, it may be possible to take this up by screwing up the nut, securing, elevating wheel.

v. *Outer and inner screws.*

When the threads become badly worn, and appreciable play occurs, the screws, together with the elevating nut as a complete unit, will have to be exchanged.

9. *Direction dial, Mk. II.*—Ensure that the dial is level, set concentrically with the socket, and fitted so that the cross-head bears on the socket and not on the dial. Necessary adjustments will be made by the armourer.

6.—Care and cleaning

Care must be taken to ensure that the jamming handles are not bent, chains securing joint pins broken, or direction dials damaged.

The elevating gear must not be allowed to work loose. The serrations must be kept clean and the jamming handle clamped only when the serrations coincide.

The mountings must, periodically, be thoroughly overhauled and cleaned.

7.—Tests, adjustments and repairs

The following points should be tested before using a mounting for firing or range work: (i) Chains correct. (ii) Jamming handles neither bent nor fouling the elevating wheel when the all-round traverse is performed. (iii) Elevating gear not too loose. (iv) Centring blocks fixed. (v) Correct fit of the gun in the crosshead. (vi) The location of the jamming handles in the "unjammed" as well as the "jammed" position. (Any necessary adjustment to be carried out by the armourer in accordance with Para. L. of C. A.7680.)

Repairs and adjustments will be carried out by the armourer as detailed in Instructions for Armourers, 1931, Part III, Chapter IV.

8. List of component parts, etc.

Designation	Details	Number for each mounting
Blocks, centring gun, left	With 2 brass screws	1
"", right		1
Bolts, jamming, elevating gear	With nut	1
Bushes, wheel, elevating	With feather and nut	1
Chains, elevating screw, Mk. II	With 3 rings, split link, swivel and screw eye	1
Chains, pin, joint, cross-head, Mk. II	With 2 rings, 2 split links, swivel eye and washer	1
Chains, pin, joint, elevating gear, Mk. II	With 2 rings, split link, swivel keep pin and washer	1
Crossheads	With 2 steel bushes	1
Dials, direction, Mk. II	Complete	1
Handles, jamming, front legs		2
Legs—		
Front, left	With shoe and serrated joint	1
Front, right	With shoe and serrated joint	1
Rear	With shoe and forked serrated joint	1
*Nuts, elevating		1
"", jamming, rear leg	With handle	1
Pins, joint, crosshead, Mk. II "B"	With loop	1
Pins, joint, elevating gear, Mk. II "B"	" "	1
Pins, joint, rear leg		1
"", tumbler	With split fixing pin	2
Pointers, direction dial, Mk. I or II	With 2 securing screws	1
Pointers, elevating		1
Screws, clamp, checking traverse	With handle, nut and jamming block	1
*Screws, elevating	In 2 parts (inner and outer)	1
Sockets	With front and rear clutch plates	1
Springs, disc		2
Studs, joint, front legs	With nut and split keep pin	2
Tumblers	With nut	1
Wheels, elevating "B"		1
Washers, stud, joint, front leg, No. 1	$\frac{3}{4}$ -in. thick	As required
Washers, stud, joint, front leg, No. 2	$\frac{1}{8}$ -in. "	"

* Nuts, elevating and screws, elevating issued as a complete unit.

Pins, joint, crosshead, Mk. II "B", D.P. and Pins, joint, elevating gear, Mk. II "B", D.P.—Marked "D.P." on the handle, are provided to replace the serviceable pins when mountings are used for instructional purposes.

A split link is fitted to the chain to facilitate exchange of the pins, the serviceable pins being replaced immediately on completion of instruction.

ADAPTER, VICKERS, M.G., MK. I

9. Description

Is designed for mounting A.F.V. patterns of .303-in. and .5-in. guns on the Mk. IV .303-in. tripod mounting.

The adapter, which is marked "for instructional purposes only", consists of an Adapter, Lewis .303-in. M.G., Mk. I converted by removing the gun band and fitting a slide to house and clamp the mounting base of A.F.V. pattern guns. Two bevelled strips, secured by screws to the slide, are reversible. The strips in one position will accommodate the .5-in. Mk. II gun and when reversed will accommodate the .303-in. Mks. IVA, IVB, VI, VI* or VII, or the .5-in. Mks. IV or V guns.

A D.P. elevating joint pin, modified by having the feather fitted at right angles to the usual position, is secured to the adapter by a chain and screwed eye.

A screwed pin with a "T" shaped handle is fitted at the rear end of the slide to engage the recoil pin hole in the mounting base to retain the gun.

MOUNT, FIELD, VICKERS .303-IN. M.G., MK. I

(Plate IV)

10. Description

Is designed to enable all A.F.V. .303-in. machine guns to be used outside the vehicle should emergency arise and is used in conjunction with the No. 4 shoulder-piece.

It consists of a saddle with a leather-lined gun band riveted to it and two telescopic legs secured by axis screws to the underside of the saddle. The gun band is split to enable it to be assembled to the barrel casing and is secured and positioned on the gun by a lever operated quick-release fastener.

The legs, which are of tubular steel, are telescopic and can be clamped at the desired height by clamping screws. Each leg has a spike and hinged curved shoe. When the spikes are embedded in the ground the shoes automatically splay out, and give rigidity to the mount when in use. When not in use the legs can be folded under the gun and retained in that position by a spring clip.

Weight of the mount, 3 lb. (approx.)

SHOULDER-PIECE, M.G., NO. 4

(Plate IV)

11. Description

The shoulder-piece fits all A.F.V. .303-in. machine guns and is used in conjunction with "Mounts, field, Vickers .303-in. M.G., Mk. I". It consists of an aluminium body, shaped to fit the shoulder, and is provided with flanges and a spring catch for engagement with the rear-crosspiece of the gun. A telescopic leg, which can be locked by means of a bolt and wing nut at any desired height, is fitted to the underside of the body and consists of an outer and inner tube, the latter being provided with a cupped base.

CHAPTER II

PACKSADDLERY

12. General remarks

1. It is desirable that animals for machine gun packsaddlery purposes should be carefully selected. Those with abnormally broad hips, or with the points of the hips very prominent, should not be chosen.

2. There are two methods of carriage on packsaddles for the Mk. I .303-in. Vickers machine gun:—

1. When used with cavalry.
2. When used with infantry.

In both methods the sets of packsaddlery comprise certain articles of general service packsaddlery, supplemented by other articles of machine gun packsaddlery, either common to both methods of carriage, or special to either.

3. The composition of cavalry or infantry sets are as shown in the tables which follow; those for infantry show the requirements when all the equipment is carried on pack, as also when the normal method of carriage is in limbered wagons with a certain percentage of packsaddlery for emergency carriage.

4. A description of the articles comprising the several sets, as also instructions for assembling and loading, are given.

13. Detail of cavalry sets

See Equipment Regulations, Part 1, 1932,
Appendix 21, Table 7.

14. Detail of infantry sets

(For infantry whose equipment is carried on pack)

Description	Number for each		
	Gun set	Tripod set	Ammunition set
Section D1.			
Bands, belly, P.M.G.	1	1	—
Bands, belly, P.M.G., straps, long ..	1	1	—
Bands, belly, P.M.G., straps, short ..	1	1	—
Bands, belly, P.M.G., straps, sup- porting	2	2	—
Bits, bridoon, P.G.S.	1	1	1
Breechings, P.G.S., Mk. V	1	1	1
Caps, shovel, Mk. II*	1	1	—
Cases, horseshoe, P.G.S.	1	1	1
Chains, collar	1	1	1
Collars, breast, P.G.S., Mk. V	1	1	1
Collars, head, P.G.S., Mk. IV	1	1	1
Cruppers, P.G.S., Mk. V	1	1	1
Girths, P.G.S., Mk. V	2	2	2
Girths, leather	—	—	1
Hangers, gun, sling	1	—	—
Hangers, tripod, sling	—	1	—
Pannels, P.G.S., Mk. V .. pairs	1	1	1
Racks, boxes, belt, ammunition, infantry	1	1	2
Reins, bridoon, P.G.S.	1	1	1
Straps, girth, P.G.S., Mk. II	4	4	4
Straps, pick and helve	—	3	—
Straps, detachable, shovel	1	1	—
Trees, P.G.S.	1	1	1

15. Detail of infantry sets (abbreviated scale)

(For infantry whose normal method of carriage is limbered wagons, but who are also issued with a percentage of pack-saddlery for emergencies.)

See Equipment Regulations, Part 2, 1930,
Section I, Appendix II.

16. Description

(a) Articles common to both cavalry and infantry sets.

1. *Case, horseshoe*.—For cavalry sets, the pattern formerly used for harness purposes, modified by the removal of the link from the back and the release of the strap with the chape (the latter being reduced in width to the size of the strap) is used.

For infantry the pattern formerly used for harness purposes (unmodified) is utilized.

2. *Bit, bridoon*.—Is an ordinary bridoon bit, but tinned to prevent rust. The mouthpiece is fitted at each end with a ring to receive the iron stops on the reins when the ordinary packsaddlery reins are used, or for universal saddlery reins to buckle to. The "T" pieces are secured to the rings by links and solid loops, and are for fitting under the leather loops on the packsaddlery head collar.

3. *Breeching, Mk. V*.—Is used for preventing the pack-saddle from slipping forward. The straps buckle to the body part of the breeching after being looped to the links on the pannels. It is supported by its hip strap, which passes through a loop on the crupper before buckling.

4. *Collar, breast, Mk. V*.—Is used to prevent the load from slipping back. The straps, after passing through the links on the pannels, buckle to the body part of the breast collar. It is supported by its own neckstrap.

5. *Collar, head, Mk. IV*.—Similar in design to the universal saddlery head collar, but the furniture is tinned iron, and it is fitted on the lower part of the headpiece with leather loops for the "T" of the bridoon bit to fit into, and with a ring on the noseband.

6. *Crupper, Mk. V*.—Is made with forked straps which, after being looped to the rear arch of the packsaddle, buckle to the body of the crupper. The use of the crupper is to assist in preventing the saddle slipping forward.

7. *Girths, Mk. V*.—Girths are made of worsted web. They are fitted with chapes and buckles at either end to connect up with the girth straps. These girths have no connecting piece, as in earlier patterns, but may be crossed when girthing up if desired.

8. *Girth, leather*.—Is a leather steadying girth, with a billet and buckle at each end.

9. *Pannels, Mk. V.*—Each pannel consists of a leather back, with tan dowlas lining, the stuffing being horsehair. They are attached to the side bars by leather pockets, the front pocket having a strap and buckle for securing purposes. An opening in the outer side admits of adjustment of the stuffing.

Pannels are fitted with links to take the straps of the Mk. V breast collar or breeching—the hooks attached to such links are intended for the chains of earlier marks.

The stuffing can be adjusted as required and kept in position by additional spot stitches if necessary.

10. *Straps, girth, Mk. II.*—Are for buckling the packsaddle girth to. They are of leather, and made with a loop at one end

11. *Cap, shovel, Mk. II.**—Is a leather cap, made to fit on the pan of the G.S. shovel. It has a detachable strap (apart from the “strap, shovel”, which does not form part of the cap), which is used for securing it.

12. *Straps, pick and helve, shovel.*—Are for use with the articles shown in the “Details of Sets” applicable to the arm (Cavalry or Infantry) concerned.

The “straps, pick and helve”, are for suspending the articles in question as part of the load.

The “strap, shovel”, retains the handle of the shovel against the rear arch of the packsaddle.

(b) Articles special to cavalry sets

13. *Carrier, water can and condenser.*—Consists of a leather tray with V-shaped straps and quick-release attachment, two buckles and straps at back, two straps with quick-release attachments and ring on front.

14. *Hangers, gun, sling, cavalry.*—Consist of :—

- i. A front suspending pad with strapping, fitted at one end with a ring to attach to the near front hook of the packsaddle, and at the other end with a buckle to connect up with the V-sling attachment alluded to at (ii)
- ii. A V-sling attachment, consisting of two straps, each carrying a sliding cranked link, with eye, and sewn to a triangular roller buckle.

This attachment is interchangeable with that used for the tripod hanger.

15. *Hanger, tripod, sling, cavalry.*—Is similar in principle to the gun hanger, but differs in the following respects as regards details :—

- i. There is a front suspending strap instead of a “pad with strapping”. This strap is, however, similarly fitted with ring and buckle, as in the case of the pad.
- ii. The rear suspending pad, with strapping, is of equal substance throughout, and the strapping shorter than that of the gun hanger, or the front suspending strap of the tripod hanger.
- iii. The strap to connect with the triangular buckle is detachable, whereas in the gun hanger it forms part of the gun rest.

16. *Rack, boxes, belt, ammunition, cavalry.*—This is a canvas rack strengthened with leather, the body of which is attached directly to a wood bottom. Wire rope slings are provided for suspension purposes which are spliced round metal thimbles attached to eyebolts, which pass down through the wood bottom and metal plate and are riveted over the nuts.

A wood bearing bar is riveted across the centre of the back to prevent friction on the canvas.

The rack is divided into three compartments, each of which holds one box of ammunition in belt, *i.e.* 750 rounds in all.

17. *Sling, ammunition belt, boxes, cavalry.*—This is a leather cradle, fitted with rings to hook to the off-side of the packsaddle, and with buckles for securing the box; also with adjustment for variation in size of belt boxes.

18. *Strap, suspending, shoe-case.*—The “strap, suspending, shoe-case” is an additional strap for the suspension of the “case, horseshoe, modified”, between the arches of the packsaddle.

19. *Tree, P.M.G., cavalry, Mk. II.*—The principle of the ordinary general service adjustable tree is retained, but the alterations and additions as under are made :—

- i. Extension pieces project beyond the arches, to which are bolted leather-covered brackets to carry the spare barrel in its case, or the pick and helve.
- ii. A connecting bar of $\frac{1}{2}$ -in. steel rod, shouldered in the centre for the extension portion of the gun rest, is fitted between the arches, passing through both the flange of the extension pieces and the web of the angle of the arches before riveting.

- iii. A gun rest, with extension to the connecting rod, is added. This gun rest is shaped, covered with leather and fitted with a strap to connect with the V-sling attachment of the gun hanger.

Note.—The tree of the gun rest is fitted with this rest when issued, but two additional gun rests with extension and strapping are issued with each complete gun equipment, ready for fitting regimentally to either of the trees on the ammunition horses, if circumstances should necessitate the employment of either of those trees for carriage of the gun.

20. *Reins, bit.*—These are of the universal saddlery pattern, and are only issuable for Cavalry Machine Gun Squadrons.

21. *Pannels, Vickers gun, cavalry.*—The near side pannel has a pocket with a $\frac{3}{4}$ -in. strap sewn at the rear to take the support. The off-side pannel is similar to the pannel Mk. V.

22. *Supports, Vickers gun, cavalry.*—This is iron, covered with leather and fitted with a $\frac{3}{4}$ -in. brass roller buckle.

(c) Articles special to infantry sets

23. *Trees, P.G.S.*—Consists of two steel arches (to which rigid hanging hooks are riveted) connected by side-bars made from padouk or sabicu wood.

The arches are jointed to the side-bars to admit of them turning automatically, thus allowing of adjustment to the backs of large or small animals, or to meet loss of condition, and to obviate the necessity of several sizes.

The side-bars are slotted for the girth straps to loop on.

24. *Bands, belly.*—These belly bands are broad leather girths 52½-in. in length by 3-in. in width, fitted at either end with a buckle and fixed leather loop to connect with the “straps, long” and “straps, short,” which follow.

25. *Straps, long (or straps, short).*—Are straps fitted at one end with a fixed leather loop. The long strap is 48-in. by 1½-in., and the short 40-in. by 1½-in.

26. *Straps, supporting.*—These are narrow straps, 13-in. by $\frac{7}{8}$ -in., which prevent the belly band dropping to the ground when the above-mentioned long and short straps are unbuckled to release the load.

27. *Chains, collar, P.G.S.*—Are used for infantry in place of the headrope. It consists of a length of chain with a bent “eye” link at one end, and a “T” piece at the other. It is also fitted with two cross aperture links for the “T” to pass through as required.

28. *Hanger, tripod, sling.*—Is designed so that the tripod may be slung in it to the hooks of the packsaddle.

It consists of a wood bearing bar, added to at the rear end by a wood block which keeps the tripod away from the animal's hip. Leather slings, felt lined, are attached to the bearing bar, the front sling being wider and longer than that at the rear. Both slings are fitted at either end with metal dees for hooking to the packsaddle, and the upper dees are provided with strap and buckle for securing both dees after the tripod is slung.

29. *Hanger, gun, sling.*—Is constructed on the same principle as the tripod hanger, but is intended for the carriage of the gun. It differs from the tripod hanger in the following respects :—

The bearing bar is added to at *either* end by wood blocks which extend below it, and keep the gun sufficiently away from the side of the animal.

Both slings are of similar width.

A leather chape carrying a metal square is screwed to the centre of the bearing bar on the upper side for the “girth, leather”, to buckle to when required.

30. *Racks, boxes, belt, ammunition, infantry.*—Consist of a canvas body with wood bottom and rope slings. The body is bound with leather at the lower edge as also at the four upper corners, and is attached directly to the wood bottom at its outside edges. No partitions are arranged, but a shaped metal plate is inserted at each corner in order to strengthen them and define the shape at the top.

The rack is suspended by a rope sling at either end, which passes under the bottom and outside the ends. A metal square is attached to the wood bottom for the leather girth to attach to, and holes are made for drainage purposes.

31. *Reins, bridoon.*—The rein is made from Preller leather. It is fitted at each end with a tinned iron stop to connect with the rings of the bit.

17. To assemble the parts

(a) General instructions

Note.—The front arch of the packsaddle tree is narrower than the hind arch.

1. *Packsaddle.*—The *tree* is the frame of the packsaddle. The *pannels* are attached to the tree by means of front and rear pockets, into which the side-bars are inserted. The front pockets are fitted with buckles and straps for securing purposes.

The *girth straps* are looped to the side-bars over the upper edge, through the slots cut for the purpose.

The *girths* are buckled to the girth straps on the offside in readiness for use.

The *crupper* straps are looped to the rear arch of the pack-saddle and then buckled to the body of the crupper.

2. *Bit, bridoon*.—The *bridoon bit* at one end may be passed through the leather loop on the off-side of the head collar in readiness for "bitting" the animal.

3. *Breechings; collars, breast*.—The straps of the breeching are first looped to the links of the pannels and then buckled to the body part of the breeching. The straps of the breast collar, after passing through the links of the pannels, are buckled to the body part of the breast collar.

(b) Instructions special to cavalry sets

4. *Carrier, water can and condenser*.—To be carried on the packsaddle by passing the V-shaped strap under the central bar, which connects the two arches, and then over the can. The two straps at the back are buckled round the brackets of front and rear arches. The rings on the two quick-release straps fit on to the near side hooks of packsaddle and underneath the rings of the ammunition rack.

5. *Packsaddle*.—Place the strap portion of the gun rest down through the slot in the "lay" of the near side pannel, through its own two sliding loops, then through the fixed loop on the underside of the gun rest.

6. *Gun hanger*.—Suspend to the hooks of the packsaddle on the near side by the rings. A small leather "tie" should be employed to fasten the front ring of the sling to the front hook of the tree, to prevent it jolting off when the gun is taken off and the led horse is in motion.

7. *Sling, ammunition belt, boxes, cavalry*.—Suspend to the hooks of the packsaddle on the off-side by the rings, the girth straps being unfastened and then buckled over, the horizontal fixed straps forming the back of the sling. This prevents the sling moving.

8. *Tripod hanger*.—This is placed on after the sling above-mentioned. It is suspended to the same hooks as the sling, but the front ring is placed *behind* the front ring of the sling, this method preventing any possibility of the rings jolting off when the tripod is taken off, and the pack horse has to move away rapidly. (Note.—There is only one pad with the tripod

hanger, and this is at the rear. A small leather "tie" should be employed to fasten the rear ring of the hanger to the rear hook of the tree.) The detachable strap is looped to the slot in the "lay" of the off panel, and then placed through the triangular buckle of the V-sling attachment.

9. *Detachable straps for shovel*.—Loop to the links of the pannels of the 1st or 2nd ammunition packsaddles.

10. *Straps, suspending, shoe-case*.—Place through the fold of the shoe-case ready for attaching to the arch of the packsaddle.

11. *Support*.—Attach to the packsaddle by passing the long arm through the rear ring of the gun hanger. The lower end of the long arm fits into the pocket on the near side pannel and is secured by the $\frac{3}{4}$ -in. strap.

(c) Instructions special to infantry sets

12. *Bands, belly, straps, long*.—To be looped to the bearing bar of the gun hanger on the gun set, and the tripod hanger on the tripod set, by passing up behind the bearing bars of the respective hangers, and then through their own fixed loops, the loops remaining at the upper edge of the bearing bars.

13. *Bands, belly, straps, short*.—To be looped to the nearside bar of the adjustable tree on the gun set, and the off-side bar of the adjustable tree on the tripod set, in a similar manner to that for the long strap, but the loops are to remain at the lower edge of the side bars.

14. *Bands, belly, straps, supporting*.—To be looped up through the slot in the "lay" of the pannel on either side of gun or tripod sets.

The *belly band* is afterwards buckled to these straps, and is supported by them whenever it is released from its long and short straps; it would otherwise drop to the ground.

15. *Straps, pick and helve*.—Looped to the bearing bar of the tripod hanger by passing down behind the bearing bar, and then through their own fixed loops.

16. *Straps, detachable, shovel*.—To be looped to the rear arch (near side) of the gun set, and the rear arch (off-side) of the tripod set.

17. *Saddling*.—Before saddling it is essential that the animal's back should be free from dirt, and any dried sweat or matted hair brushed out. The pannels should be thoroughly dried, beaten, and freed from any dirt or grit before being placed on the animal's back. Neglect of these precautions is

the most fertile source of sore backs. Constant attention must be paid to the stuffing of the pannels, and care taken to prevent them from becoming hard and lumpy.

When possible, animals should not be kept standing longer than is necessary when saddled and loaded.

If a saddle has shifted, do not try to push it into a better position; off-load, off-saddle, and re-saddle properly.

Do not allow men to hang their rifles or equipment on the loads, or hold on to them on the march.

Girths may, if wished, be crossed under the animal's belly, and this method is often useful when there is a tendency for the girths to slip. When the girths are fastened the buckles should rest on the lower edges of the pannels, as this will prevent buckle galls.

The breeching and breast collar should be so fitted that movement of the animal is not impeded. Constant rubbing of either of these articles, when fitted too tightly, will inevitably cause galls.

The crupper requires careful fitting, as otherwise the animal's dock will be galled. A good rough guide is to arrange that the breadth of the hand will pass between the body of the breeching and the body of the crupper.

The bridoon bit should hang low enough to prevent the corners of the animal's mouth from being wrinkled.

APPENDIX I

LIST OF PARTS—KEY TO PLATES I TO IV MOUNTING, TRIPOD, .303-IN. M.G., MK. IV "B"

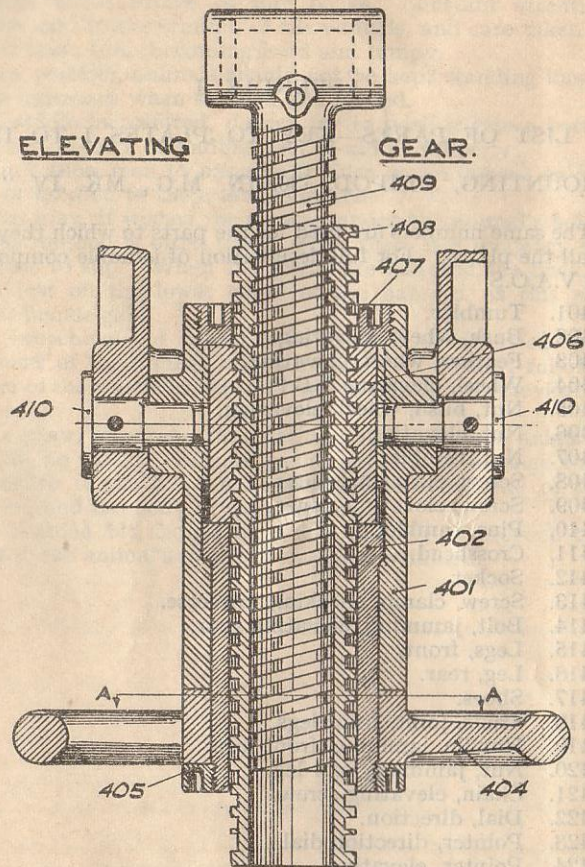
The same numbers are used for the parts to which they refer in all the plates. For full designation of issuable components see V.A.O.S.

401. Tumbler.
402. Bush, wheel, elevating.
403. Feather, wheel, elevating.
404. Wheel, elevating "B".
405. Nut, bush, wheel, elevating.
406. Nut, elevating.
407. Nut, tumbler.
408. Screw, elevating, outer.
409. Screw, elevating, inner.
410. Pins, tumbler.
411. Crosshead.
412. Socket.
413. Screw, clamp, checking, traverse.
414. Bolt, jamming, elevating gear.
415. Legs, front.
416. Leg, rear.
417. Shoes.
418. Studs, joint, front legs.
419. Handle, jamming, front legs.
420. Nut, jamming, rear leg.
421. Chain, elevating screw.
422. Dial, direction.
423. Pointer, direction dial.
424. Pointer, elevating.
425. Pin, joint, elevating gear.
426. Pin, joint, crosshead.

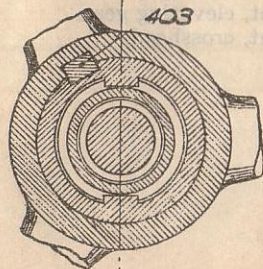
PLATE I

ELEVATING

GEAR.

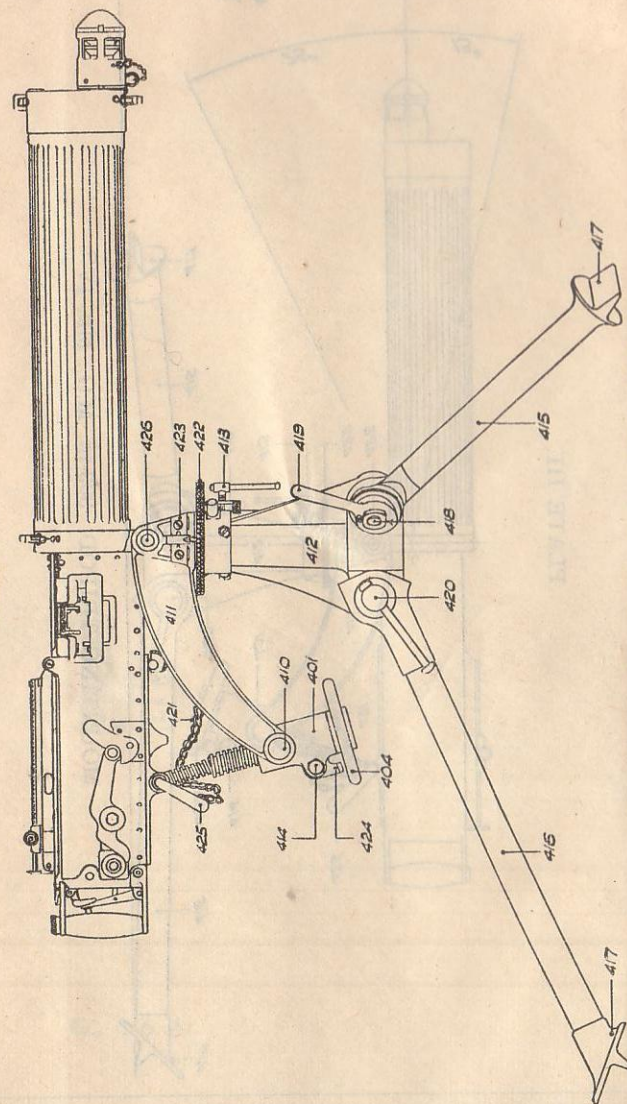


SECTION A. A.



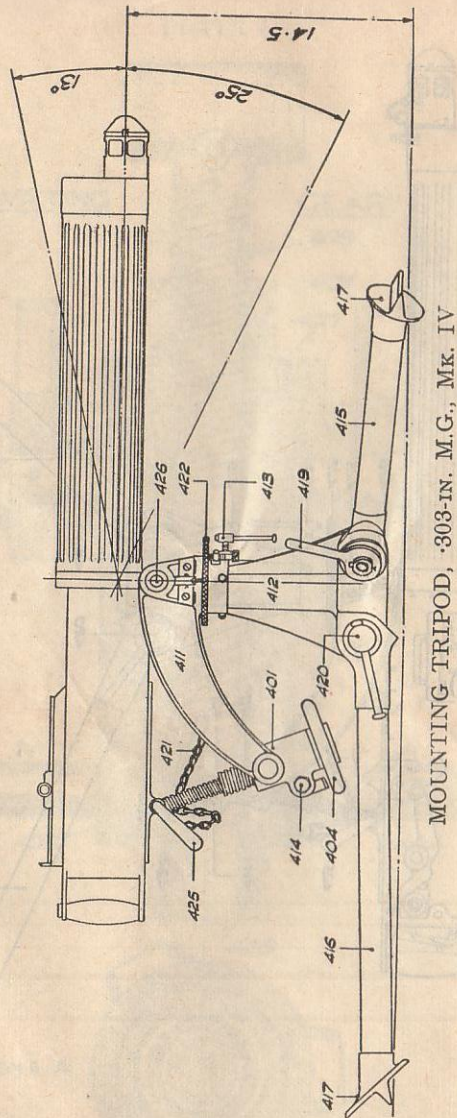
MOUNTING TRIPOD, .303-IN. M.G., Mk. IV

PLATE II

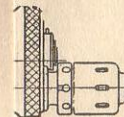


MOUNTING TRIPOD, .303-IN. M.G., Mk. IV

PLATE III

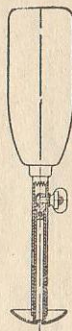


MOUNTING TRIPOD, 303-IN. M.G., Mk. IV

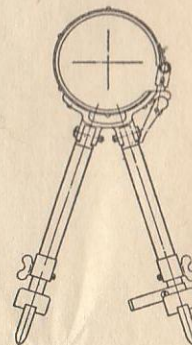


G., No. 4

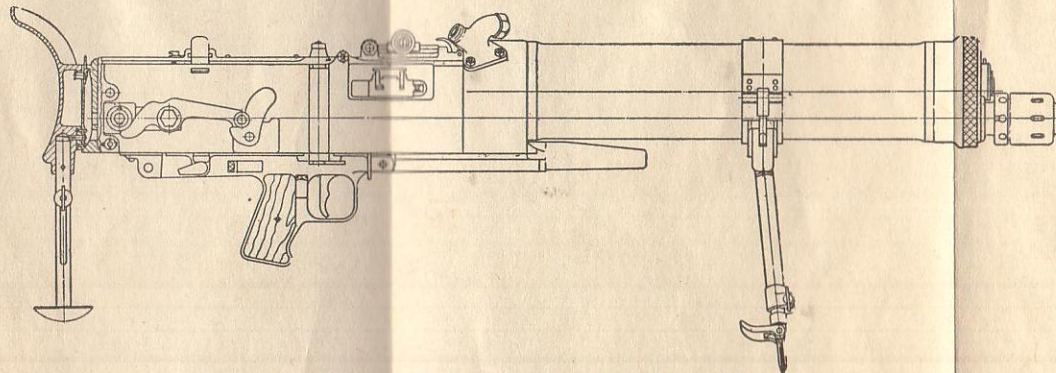
PLATE IV



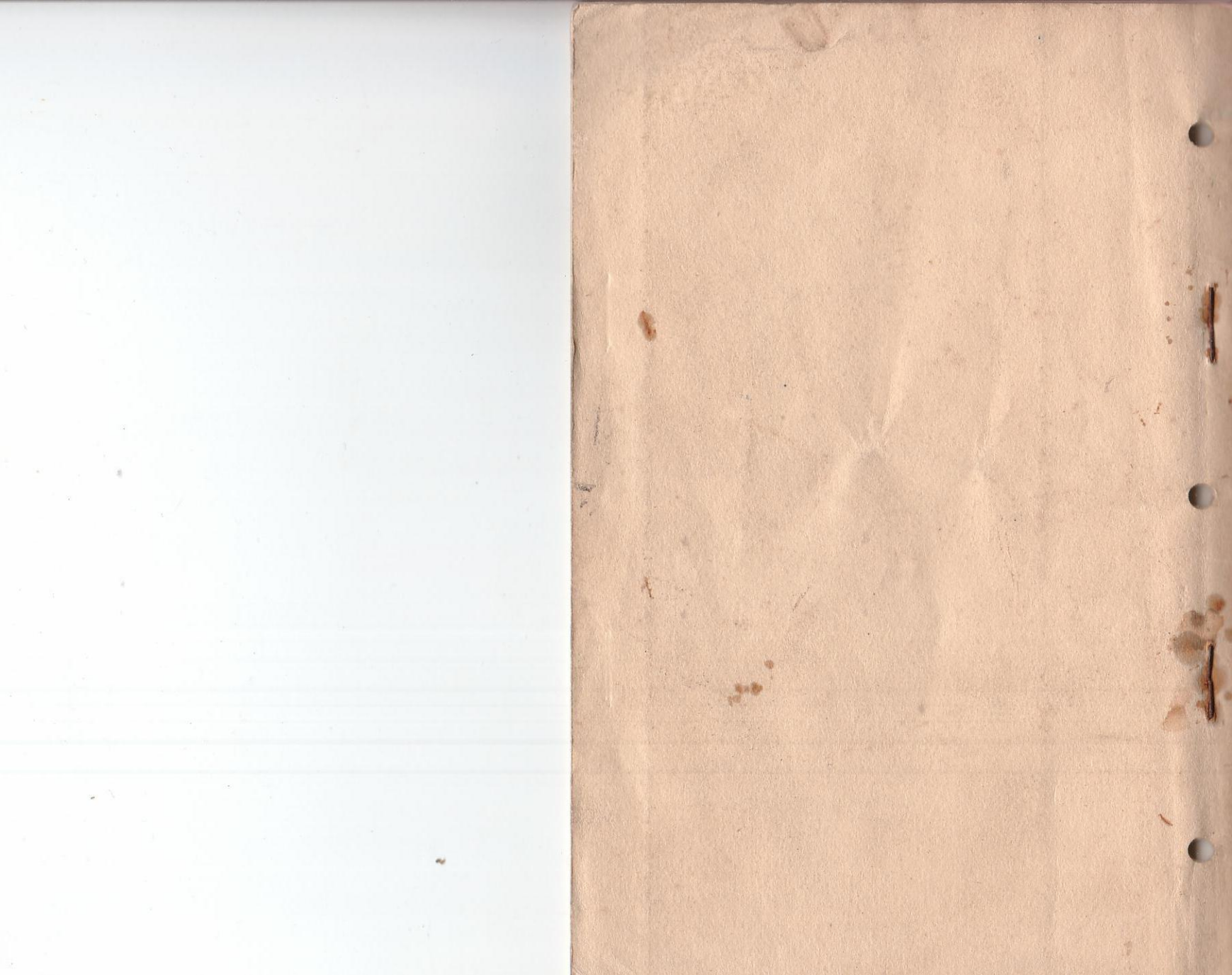
LOOKING
FORWARD



LOOKING
FORWARD



GUN, MACHINE, VICKERS, .303-IN., Mk. VII
Mounted on
MOUNT, FIELD, VICKERS .303-IN. M.G., Mk. I AND SHOULDER-PIECE, M.G., No. 4





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